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(PCT Rule 61.2)

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Date of mailing (day/month/year)  
09 March 1999 (09.03.99)

International application No.  
PCT/US98/01617

Applicant's or agent's file reference  
RCA 88702

International filing date (day/month/year)  
29 January 1998 (29.01.98)

Priority date (day/month/year)  
15 July 1997 (15.07.97)

## Applicant

HALL, Estill, Thone, Jr. et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

21 January 1999 (21.01.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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Authorized officer

I. Britel

Telephone No.: (41-22) 338.83.38

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RCA 88702	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US98/01617	International filing date (day/month/year) 29/01/1998	Priority date (day/month/year) 15/07/1997
International Patent Classification (IPC) or national classification and IPC H04N9/31		
Applicant THOMSON CONSUMER ELECTRONICS, INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 21/01/1999	Date of completion of this report 15. 09. 99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Noll, B Telephone No. +49 89 2399 8700 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US98/01617

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-20 as originally filed

**Claims, No.:**

1-20 as originally filed

**Drawings, sheets:**

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US98/01617

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-10
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-10
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re section V:**

The projection tv according to claim 1 contains two aspects: (1) disposing three projectors relative to a holographic reflector and a screen such that a projector having a first, shortest optical path is disposed in a substantially orthogonal orientation with the screen and two additional projectors are disposed such that their optical paths have a certain angle of incidence with respect to the screen, and (2) use of a 3D hologram as a projection screen which hologram represents a 3D array of lenticular elements and displays images with controlled light dispersion. Both aspects per se are well known in the art, see documents JP-A-6 082 625 or JP-A-9 073 132 for the projection screen and JP-A-8 292 498 or WO-A-92 09918 for the arrangement comprising projector and holographic reflector (the documents are hereinafter referred to as D1 to D4, respectively). The subject-matter of claim 1 consists merely in the juxtaposition or association of both known and common measures functioning in their normal way and not producing any non-obvious working interrelationship. The combined features do not mutually support each other in their effects to such an extent that any unexpected or surprisingly advantageous result is achieved (cf. Guidelines, C-IV, 9.8 (B1)). The subject-matter of claim 1 does not therefore involve an inventive step (Article 33(3) PCT).

The additional features of dependent claims 2-10 merely relate to minor design details which do not appear to go beyond normal design considerations of a skilled person. (claims 3, 9 and 11), or are obvious from the above mentioned documents, in particular D4 (claims 2, 4, 5-8).

**Re section VII:**

Reference signs in parentheses should be inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT.

To meet the requirements of Rule 5.1(a)(ii) PCT, the documents D1 to D4 mentioned above should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

**Re section VIII:**

The term "panchromatic optical properties" in claim 5 is vague and not suitable to impose any clear technical limitation (Article 6 PCT). When clarifying the meaning of this term (see page 14, last paragraph) it comes out that claim 5 is substantially identical to claims 6-8 and therefore superfluous.



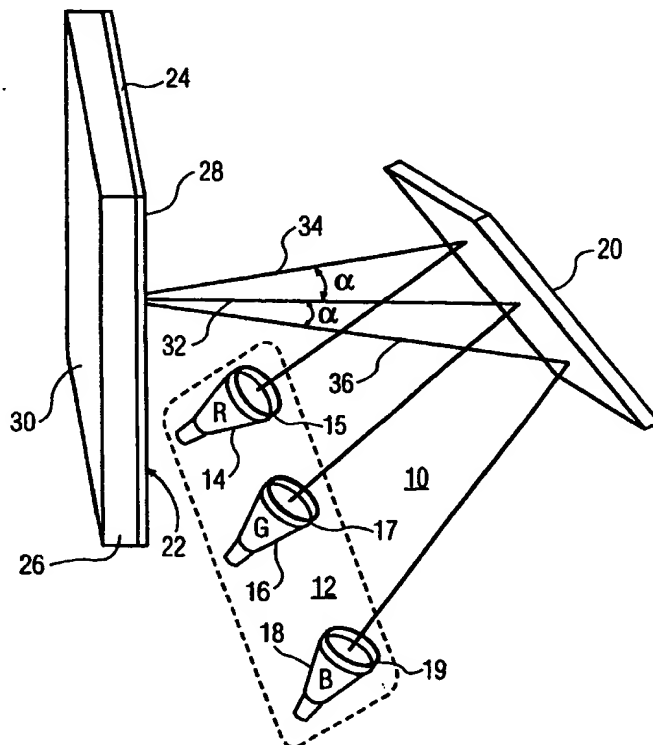
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : H04N 9/31, G03B 21/62, G02B 5/32		A1	(11) International Publication Number: <b>WO 99/04576</b>
			(43) International Publication Date: 28 January 1999 (28.01.99)
(21) International Application Number: PCT/US98/01617		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 29 January 1998 (29.01.98)			
<b>(30) Priority Data:</b> 60/052,621 15 July 1997 (15.07.97) US 60/053,317 21 July 1997 (21.07.97) US			
<b>(71) Applicant (for all designated States except US):</b> THOMSON CONSUMER ELECTRONICS, INC. [US/US]; 10330 North Meridian Street, Indianapolis, IN 46290-1024 (US).			
<b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> HALL, Estill, Thone, Jr. [US/US]; 7904 Dawson Drive, Fishers, IN 46038 (US). PFILE, Wendy, Rene [US/US]; 4540 Eastbourne Drive, Indianapolis, IN 46226 (US).			
<b>(74) Agents:</b> TRIPOLI, Joseph, S. et al.; GE & RCA Licensing Management Operation, Inc., P.O. Box 5312, Princeton, NJ 08543 (US).		<b>Published</b> With international search report.	

(54) Title: HOLOGRAPHIC SCREEN PROJECTION TELEVISIONS WITH OPTICAL CORRECTION

## (57) Abstract

A projection television (10) is provided that comprises an optical system having at least three image projectors (14, 16, 18) for projecting respective images of different colors onto a projection screen (22), and a holographic reflector (20) disposed in optical communication with the image projectors (14, 16, 18) and the screen (22) so that one (16) of the projectors has a first optical path (32) in a substantially orthogonal orientation with the screen (22) and at least two (14, 18) of the projectors have respective optical paths (34, 36) converging toward the first optical path (32) in a non-orthogonal orientation defining angles of incidence. The projection screen (22) is formed from a three-dimensional hologram (26) representing a three-dimensional array of lenticular elements disposed on a substrate (24). The screen receives images from the projectors (14, 16, 18) on a first side and displaying the images on a second side with controlled light dispersion of all the displayed images.



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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/01617

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04N9/31 G03B21/62 G02B5/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04N G03B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PATENT ABSTRACTS OF JAPAN vol. 97, no. 7, 31 July 1997 & JP 09 073132 A (CASIO COMPUTER CO LTD), 18 March 1997,	1, 2, 5
A	see abstract	11, 12, 15
Y	WO 92 09918 A (THOMSON-CSF) 11 June 1992 see page 8, line 28 - page 9, line 26	1, 5 11, 15
Y	PATENT ABSTRACTS OF JAPAN vol. 97, no. 3, 31 March 1997 & JP 08 292498 A (ASAHI GLASS CO LTD), 5 November 1996,	1, 2
A	see abstract	11, 12
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

6 May 1998

Date of mailing of the international search report

12/05/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Pigniez, T



# INTERNATIONAL SEARCH REPORT

Inte .onal Application No  
PCT/US 98/01617

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 18, no. 333 (P-1759), 23 June 1994 & JP 06 082625 A (RICOH CO LTD), 25 March 1994, see abstract ----	1,11
A	WO 96 07953 A (PHILIPS ELECTRONICS N.V.) 14 March 1996 see the whole document ----	1,11
A	US 5 046 793 A (HOCKLEY & AL.) 10 September 1991 see column 6, line 24 - column 8, line 31 ----	1,11
A	WO 95 34832 A (THOMSON-CSF) 21 December 1995 see abstract; figures 4A,4B see page 7, line 28 - page 8, line 15 ----	1,11
A	WO 97 10523 A (RICHMOND HOLOGRAPHIC RESEARCH & DEVELOPMENT LIMITED) 20 March 1997 see page 5, line 20 - page 6, line 34 ----	1,11
A	EP 0 479 490 A (PHYSICAL OPTICS CORPORATION) 8 April 1992 see page 14, line 10 - line 28 ----	1,11
A	EP 0 349 947 A (HUGHES AIRCRAFT COMPANY) 10 January 1990 see column 3, line 48 - column 6, line 22 ----	1,11
A	EP 0 349 884 A (HUGHES AIRCRAFT COMPANY) 10 January 1990 see abstract ----	1,11
A	PATENT ABSTRACTS OF JAPAN vol. 97, no. 9, 30 September 1997 & JP 09 114354 A (DENSO CORP), 2 May 1997, see abstract ----	1,11
A	PATENT ABSTRACTS OF JAPAN vol. 97, no. 9, 30 September 1997 & JP 09 113995 A (DENSO CORP), 2 May 1997, see abstract ----	1,11
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Information on patent family members

International Application No

PCT/US 98/01617

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Date of the actual completion of the international search

6 May 1998

Date of mailing of the international search report

12/05/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Pigniez, T

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 98/01617

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	PATENT ABSTRACTS OF JAPAN vol. 97, no. 9, 30 September 1997 & JP 09 113995 A (DENSO CORP), 2 May 1997, see abstract ---	1,11
A	PATENT ABSTRACTS OF JAPAN vol. 97, no. 7, 31 July 1997 & JP 09 073133 A (CASIO COMP CO LTD), 18 March 1997, see abstract -----	1,11

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Information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9209918	A	11-06-1992	FR 2670034 A	05-06-1992
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